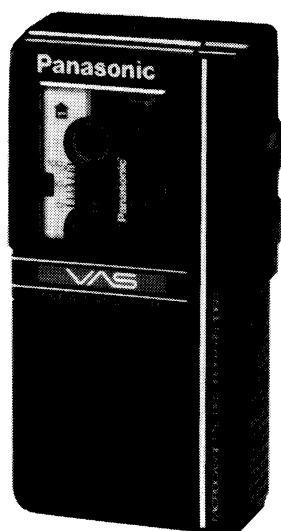


# Service Manual

Microcassette™ Recorder

Microcassette

## RN-106D



Color

(K)... Black Type

Area

Country Code	Area	Color
[P]	U.S.A.	(K)

### RN-105 MECHANISM SERIES

#### ■ SPECIFICATIONS

Power Requirement:	Battery; 3V (two "AA" size, R6P/LR6, UM-3 batteries) AC; 120V, 60Hz (with optional Panasonic AC adaptor RD-9443HA) Car battery; with optional Panasonic car adaptor RP-993 and Panasonic DC plug adaptor RP-007	Program Time:	2 hours with RT-60MC microcassette tape (at "1.2" speed) 1 hour with RT-60MC microcassette tape (at "2.4" speed)
Speaker:	1 <sup>3</sup> / <sub>4</sub> " (4.5cm) PM dynamic speaker, 10Ω	Track System:	2-track monaural recording and playback
Power Output:	300mW RMS (MAX.)	Input:	DC in; 3V (Mini type) (φ2.5)
Tape Speed:	15/32 ips (1.2cm/s) 15/16 ips (2.4cm/s)	Output:	Monitor; 8Ω (φ3.5)
		Dimensions:	2 <sup>5</sup> / <sub>16</sub> " × 4 <sup>5</sup> / <sub>8</sub> " × 1 <sup>1</sup> / <sub>16</sub> " (59.5 × 117 × 27.5mm)
		Weight:	5.1 oz (145 g) without batteries

Weights and dimensions shown are approximate.  
Design and Specifications are subject to change without notice.

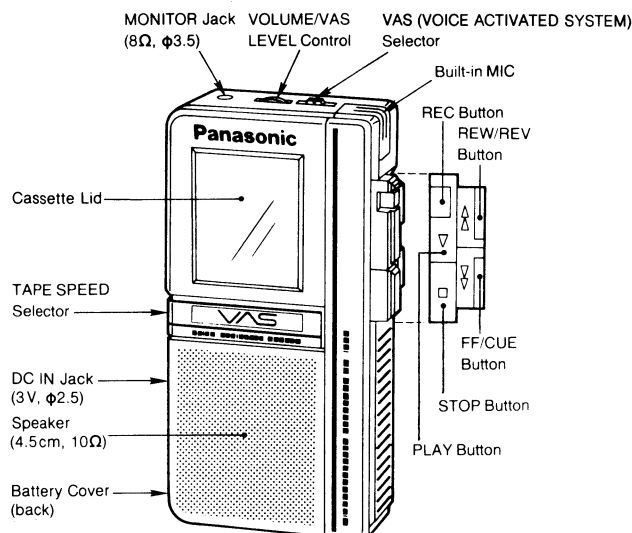
# Panasonic®

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## LOCATION OF CONTROLS



### BATTERY SERVICE LIFE

UM-3 (AA-size) Batteries

Approx. 6.1 hours of recording (EIAJ)

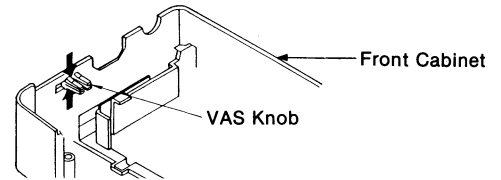
Approx. 4.5 hours of playback (EIAJ)

The above battery service life is measured according to the conditions set forth by EIAJ (Electronic Industries Association of Japan). As the battery service life varies with the method of operation and environmental conditions, use these values as reference.

## DISASSEMBLY INSTRUCTIONS

<b>Ref. No.</b> 1	<b>Removal of the Rear cabinet</b>	<ol style="list-style-type: none"> <li>1. Remove the battery cover.</li> <li>2. Remove the 5 screws (①~⑤).</li> <li>3. Push the rib with a flat screwdriver.</li> <li>4. Remove the rear cabinet in the direction of the arrow.</li> </ol>	
<b>Procedure</b> 1	<p>Battery Cover</p>	<p>Rear Cabinet</p> <p>Ribs</p> <p>Flat Screwdriver</p>	
<b>Ref. No.</b> 2	<b>Removal of the Mechanism unit and Main P.C.B.</b>	<b>Ref. No.</b> 3	<b>Removal of Main P.C.B.</b>
<b>Procedure</b> 1→2	<p>• Remove the battery terminal with a flat screwdriver, and then remove the mechanism unit and Main P.C.B. in the direction of the arrow.</p> <p>Mechanism Unit and Main P.C.B.</p> <p>Flat Screwdriver</p>	<b>Procedure</b> 1→2→3	<ol style="list-style-type: none"> <li>1. Remove the one screw (①).</li> <li>2. Disconnect the 4 soldered connections of the lead wires, and then remove the Main P.C.B.</li> </ol> <p>Soldered Connections</p> <p>Soldered Connections</p> <p>Main P.C.B.</p>
<b>Ref. No.</b> 4	<b>Removal of the Cassette lid</b>		
<b>Procedure</b> 1→2→4	<ol style="list-style-type: none"> <li>1. Remove the spring.</li> <li>2. Push the rib in the direction of the arrow, and then remove the cassette lid.</li> </ol>		
		<p>Rib</p> <p>Spring</p> <p>Cassette lid</p>	

<b>Ref. No.</b> 5	<b>Removal of the VAS knob</b>
<b>Procedure</b> 1→2→5	<ul style="list-style-type: none"> <li>• Push the rib in the direction of the arrow, and then remove the VAS knob.</li> </ul>



## REASSEMBLY PROCEDURES

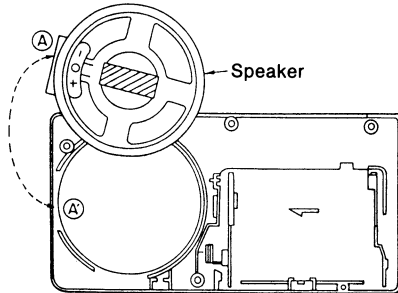


Fig. 1

- **How to install the speaker.**  
Install the speaker in the speaker box as shown in Fig. 1.

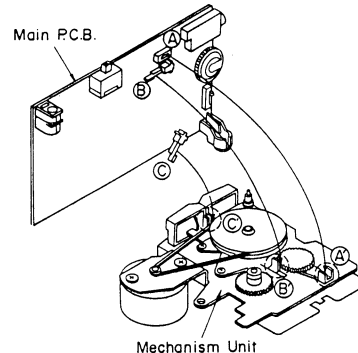


Fig. 2

- **How to install the Main P.C.B.**  
Install the main P.C.B. in the mechanism unit so that positions A, B and C match with positions A', B' and C' respectively as shown in Fig. 2.

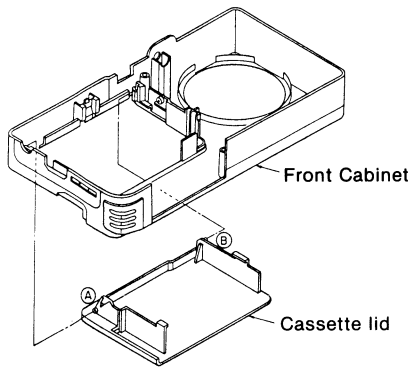


Fig. 3

- **How to install the cassette lid.**

1. First insert lid hinge A and then hinge B in the front cabinet as shown in Fig. 3.
2. With the lid open, insert spring end A in hole A in the front cabinet as shown in Fig. 4.
3. Close the cassette lid and then insert spring end B in hole B in the cassette lid as shown in Fig. 5.

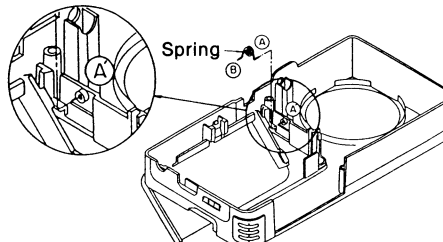


Fig. 4

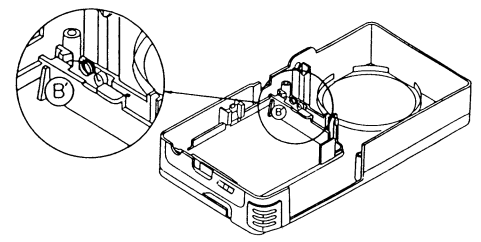


Fig. 5

## MEASUREMENT AND ADJUSTMENT METHODS

**NOTES:** Make sure the unit is in good working order before attempting measurements and adjustments.  
Set the switches and controls to the positions as specified for this procedure.

- Make sure heads are clean.
- Make sure capstan and pinch roller are clean.
- Suggested room temperature for this procedure.
- Volume control: Maximum
- Tape speed selector switch: 2.4 cm/s
- FF/REW switch: OFF
- VAS selector switch: OFF

ITEM	MEASUREMENT & ADJUSTMENT
<b>Ⓐ Head Azimuth Adjustment</b> Condition: • Playback mode Equipment: • Test tape ... QZZMWA	<ol style="list-style-type: none"> <li>1. Assemble the mechanism and cabinet parts completely.</li> <li>2. Play back the head azimuth adjusting tape (2.4 cm/s, 3 kHz ... QZZMWA.)</li> <li>3. Adjust the azimuth adjusting screw (Refer to Fig. 1) of Record/Playback head to obtain the maximum monitor output.</li> <li>4. After adjusting, repeat PLAY and STOP some times and confirm that the output variation is less than the specified level (within 3 dB).</li> </ol>
<b>Ⓑ Tape speed adjustment</b> Condition: • Playback mode Equipment: • DC power supply • Digital electronic counter • Test tape ... QZZMWA for 2.4 cm/s	<ol style="list-style-type: none"> <li>1. Test equipment connection is shown in Fig. 2.</li> <li>2. Apply 3 V to DC IN.</li> <li>3. Connect the monitor output (8Ω) to the counter.</li> <li>4. Playback the tape speed adjusting tape (for 2.4 cm/s 3 kHz. QZZMWA).</li> <li>5. Measure this frequency.</li> </ol> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>Standard value: 2970 ± 20 Hz (2.4 cm/s)</b>  <b>(ambient temperature: 10° C ~ 30° C)</b> </div> <ol style="list-style-type: none"> <li>6. If measured value is not within standard, adjust as follows. <ul style="list-style-type: none"> <li>• <b>2.4 cm/s adjustment</b></li> <li>1. Set the tape speed selector switch to 2.4 cm/s.</li> <li>2. Adjust tape speed adjustment VR2 (Refer to Fig. 3) so that frequency is 2970 ± 20 Hz.</li> </ul> </li> </ol>

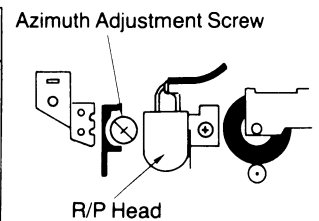


Fig. 1

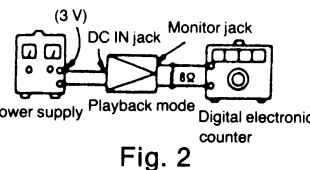


Fig. 2

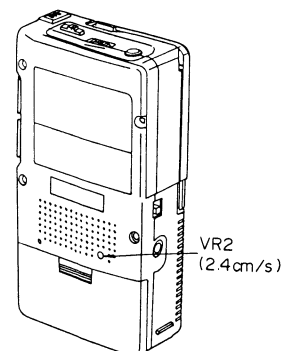
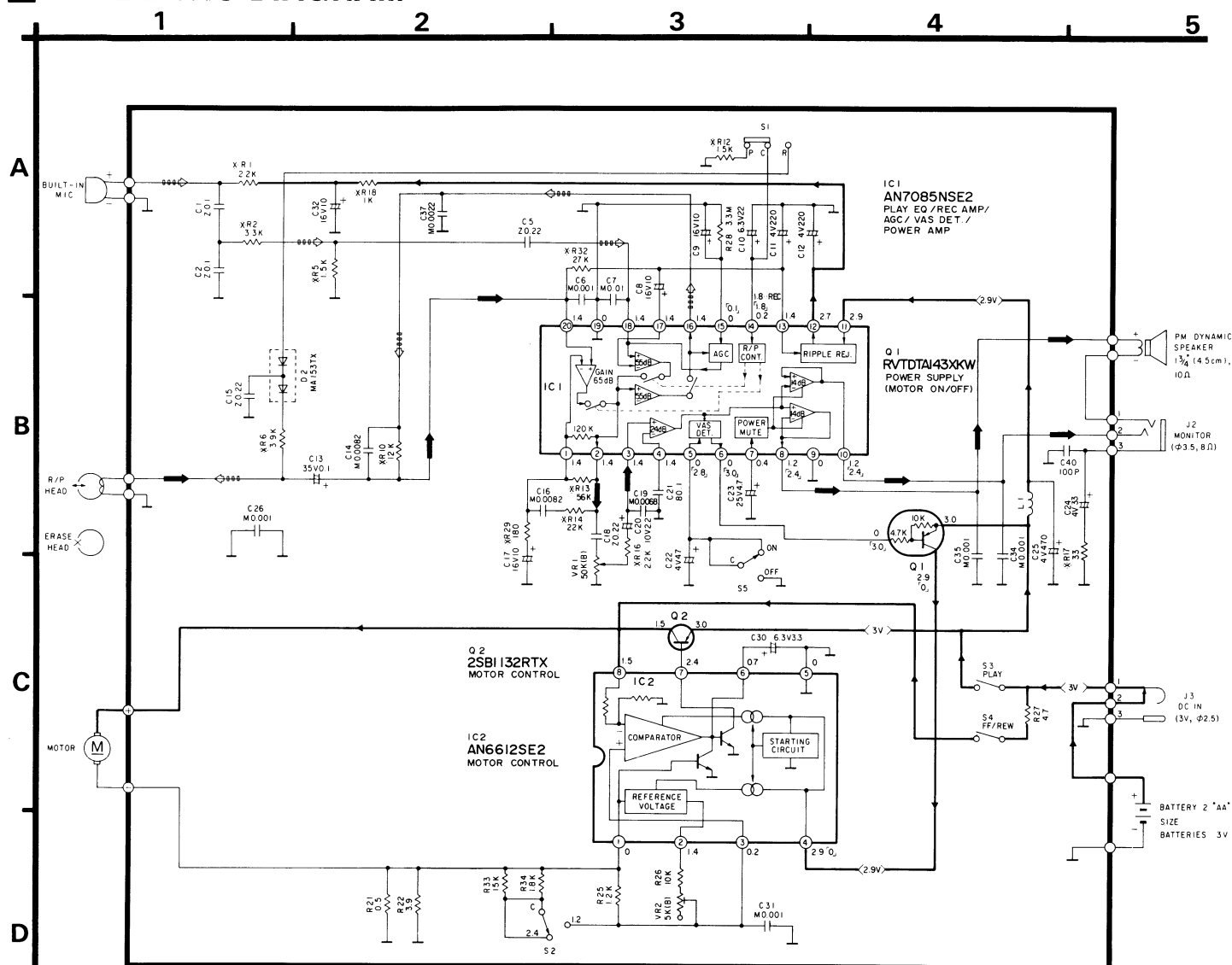


Fig. 3

## SCHEMATIC DIAGRAM



## Notes:

1. S1: Record/Playback switch in "PLAYBACK" position.  
(R... RECORD, P... PLAYBACK)
2. S2: Tape speed selector switch in "2.4cm/s" position.  
(1.2... 1.2cm/s, 2.4... 2.4cm/s)
3. S3: Playback switch in "OFF" position.
4. S4: FF/REW switch in "OFF" position.
5. S5: VAS selector switch in "ON" position.
6. VR1: Volume/VAS level control VR.
7. VR2: Tape speed adjustment VR. (2.4cm/s)
8. DC voltage measurement are taken with electronic voltmeter from negative terminal of battery.  
No mark ..... Playback (2.4cm/s, VAS "OFF")  
" " ..... VAS "ON" position
9. Battery current: No signal ..... 118mA (VR min.)  
Playback ..... 293mA (VR max.)  
Record ..... 120mA
10. ※ mark: Printed Resistor

• This schematic diagram may be modified at any time with the development of new technology.

➔ : +B Line

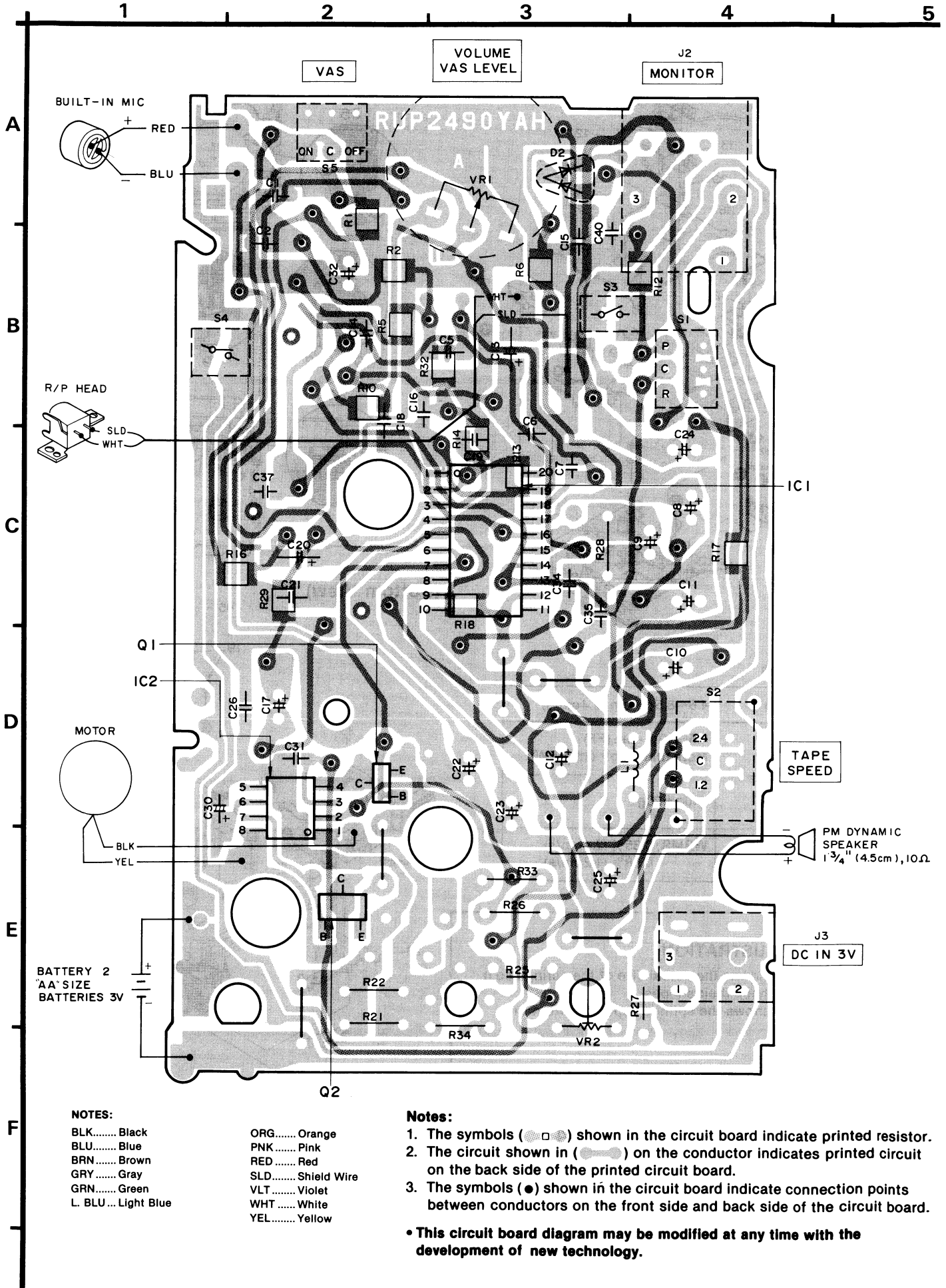
➔ : Playback Signal Line

◻◻◻◻ : Record Signal Line

## TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODE

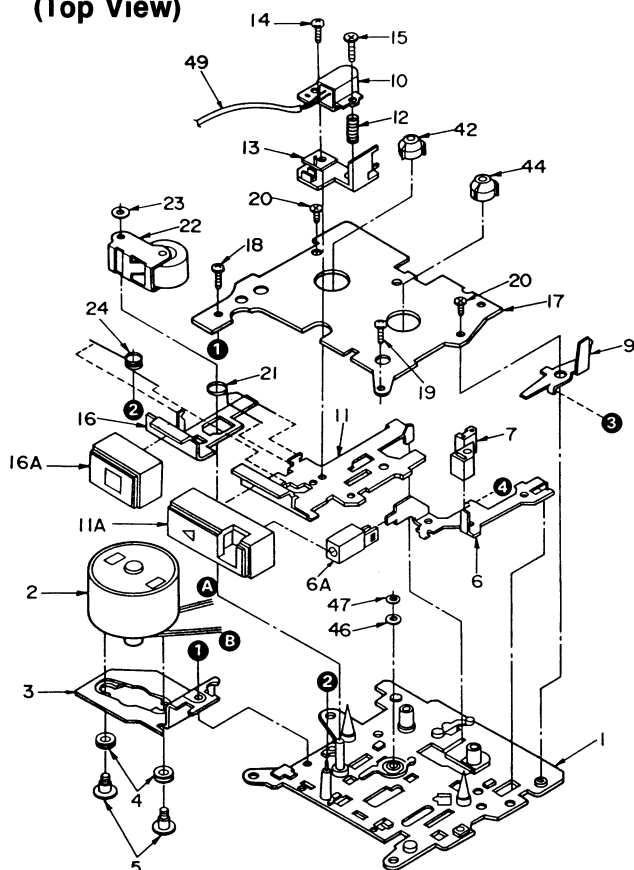
AN6612SE2 8 pin 	CX20107MT 24 pin 	RVDTA143XKW 	2SB1132RTX 	MA153TX Cathode Anode Cathode 
------------------------	-------------------------	-----------------	----------------	--

## CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

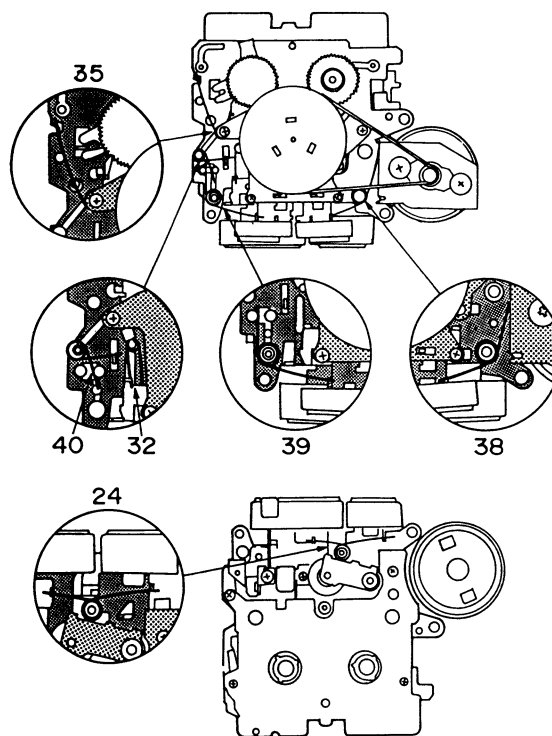


## MECHANICAL PARTS LOCATION

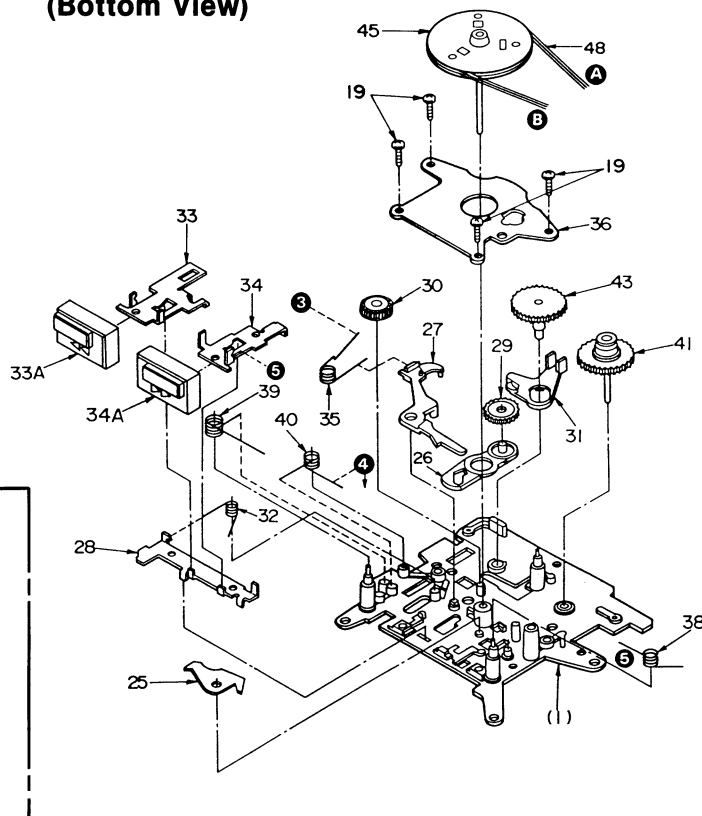
(Top View)



• SPRING LOCATION



(Bottom View)

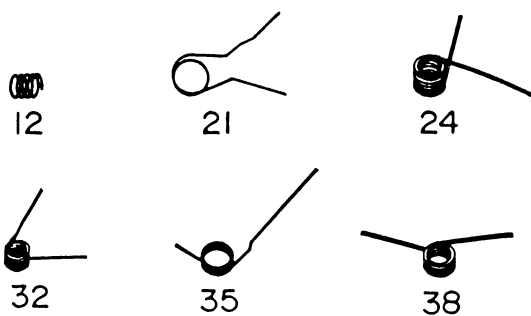


## Specifications

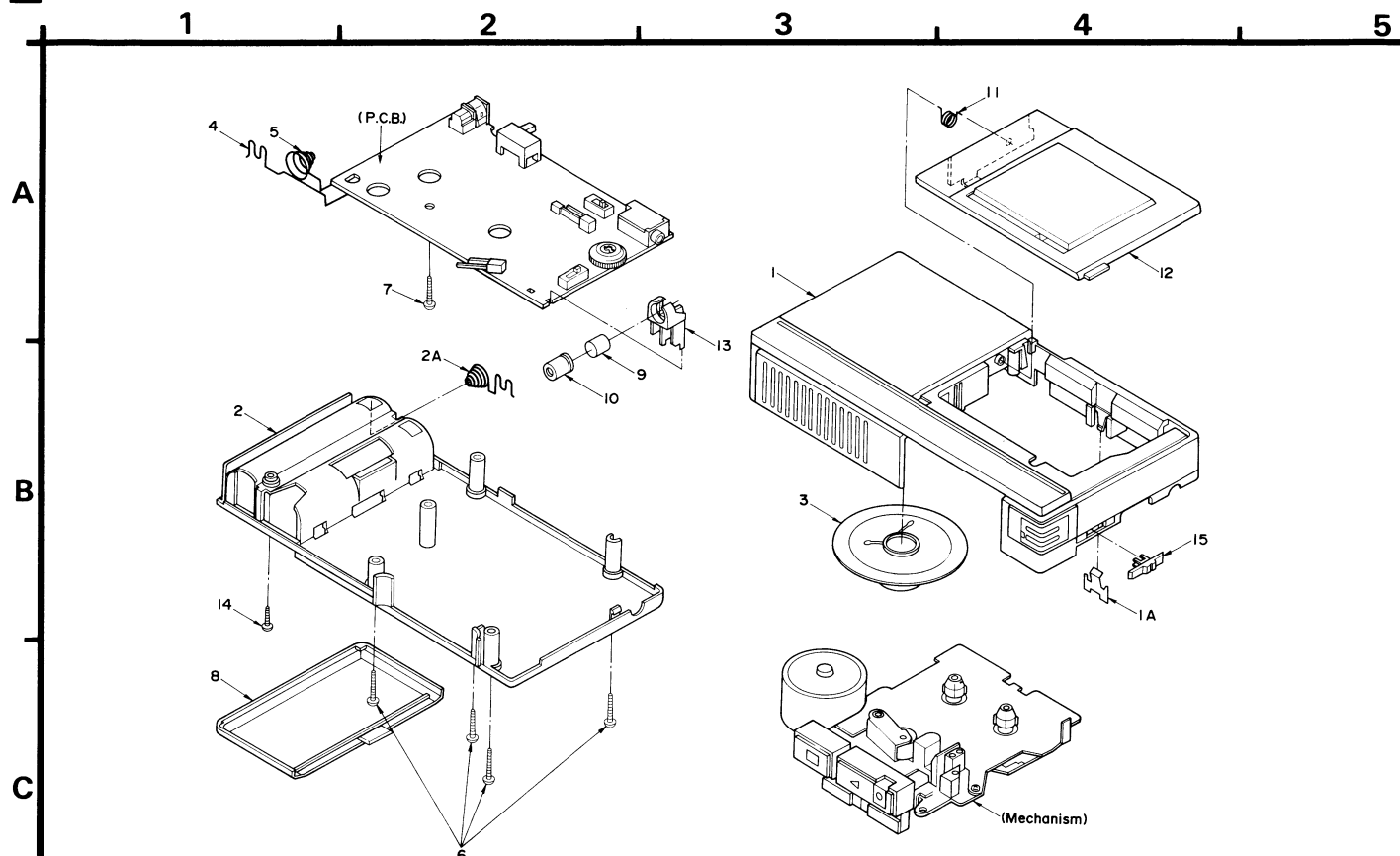
Playback torque	4.5~8.5 g · cm (2.4 cm/s)
FF/REW torque	4.5~10 g · cm (FF) More than 30 g · cm (REW)
Pressure of Pinch roller	140g ± 20g
Wow and flutter	WRMS; 0.35% (2.4 cm/s) 0.58% (1.2 cm/s)

## • SPRING ILLUSTRATION

The illustration shows the actual size of the springs so it can be used to check their shapes.  
(The illustration shows the springs separated from the mechanism.)



# CABINET PARTS LOCATION



## REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CABINET AND CHASSIS			6	XTN2+18JFZ	SCREW
1	RKM0057	FRONT CABINET ASS'Y	7	RHE5200ZA	SCREW
1A	RUS763ZA	SPRING	8	RKK0005-K	BATTERY COVER
2	RKS0033	BACK CABINET ASS'Y	9	WM60AY	MICROPHONE
2A	RJC30013ZB	BATTERY TERMINAL	10	RHG3071ZA	RUBBER
3	RWN105M	SPEAKER ASS'Y	11	RUS764ZC	SPRING
4	RJC30019ZB	BATTERY TERMINAL	12	RKF0060	CASSETTE LID ASS'Y
5	RJC70028ZB	BATTERY TERMINAL	13	RHR1373ZA	HOLDER
			14	XTN2+8BFV	SCREW
			15	RBD453ZB-0	KNOB, VAS
MECHANISM			23	RNW164Z	WASHER
CASSETTE DECK			24	RUW184ZA	SPRING
1	1UA0119YB	CHASSIS ASS'Y	25	RNL185ZA	LEVER
2	MHKN-3A3LDF	MOTOR	26	RNL186ZA	LEVER
3	RMD3101ZB	BRACKET	27	RNL188ZA	LEVER
4	RHG5065ZB	RUBBER SPACER	28	RNR76ZB	ROD
5	RFE366ZA	SCREW	29	RNG133ZB	GEAR
6	RZL3N115P	BUTTON ASS'Y, REC	30	RNG134ZA	GEAR
6A	RBC1338ZA-0	BUTTON, REC	31	RNL181ZA	LEVER
7	RJH2M03XZAG	E.HEAD	32	RUW186YA	SPRING
9	RNL187ZC	LEVER	33	RZL4N115P	BUTTON ASS'Y, REW/REV
10	RJHOM04YZAS	R/P HEAD	33A	RBC1342YD-0	BUTTON, REW/REV
11	RZL2N115P	BUTTON ASS'Y, PLAY	34	RZL5N115P	BUTTON ASS'Y, FF/CUE
11A	RBC1339YB-0	BUTTON, PLAY	34A	RBC1341YD-0	BUTTON, FF/CUE
12	RUQ106ZA	SPRING	35	RUW190YB	SPRING
13	RMD5015ZB	BRACKET	36	RUA841ZA	PLATE
14	XQN14+CM3	SCREW	38	RUW188YA	SPRING
15	RHE5191ZA	SCREW	39	RUW189ZB	SPRING
16	RGU0174	BUTTON ASS'Y, STOP	40	RUW187ZA	SPRING
16A	RGU0084-K	BUTTON, STOP	41	1DW0022ZA	GEAR
17	RUA842ZB	PLATE	42	RDR137ZA	REEL TABLE
18	XQN16+CF3	SCREW	43	RNG132ZA	GEAR
19	XQN16+C3FN	SCREW	44	RDR141ZA	REEL TABLE
20	XQS14+A3	SCREW	45	1DW0046ZA	FLYWHEEL ASS'Y
21	RUW185YA	SPRING	46	QBK92060	WASHER
22	1HG0009ZA	PINCH ROLLER ASS'Y	47	RNW110ZA	WASHER
			48	RDV101YA	BELT
			49	1WEA125ZA	WIRE

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
INTEGRATED CIRCUITS			VR2	EVND4AA00B53	V.R. TAPE SPEED
IC1	AN7065NSE2	I.C. POWER	COILS AND TRANSFORMERS		
IC2	AN6612SE2	I.C. MOTOR CONTROL	L1	RLQZP1R0M	COIL
TRANSISTORS			SWITCHES		
Q1	RVTDT143TK	TRANSISTOR	S1	RSS2B71ZA-M	SW, REC./PLAY
Q2	2SB1132R	TRANSISTOR	S2	RSS2B57Z	SW, TAPE SPEED
DIODES			S3	RSH1A92ZB-U	SW, PLAY
D2	MA153	DIODE	S4	RSH1A92ZB-U	SW, FF/REW
VARIABLE RESISTORS			S5	ESD1132233	SW, VAS
VR1	EVLCWAA00B54	V.R. VOLUME/VAS LEVEL	OTHERS		
			J2	QJA0199	JACK, MONITOR
			J3	RJJB2Z	JACK, DC IN

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
PACKING MATERIAL			P3	RPQ0019	SHEET
P1	RPN0092	BLISTER FILM (BOTTOM)	ACCESSORIES		
P2	RPN0093	BLISTER FILM (TOP)	A1	RQT0038P	INST. MANUAL
			A2	QFT20CDPY	TAPE

## RESISTORS & CAPACITORS

### Numbering System For Resistors

Example:

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1K $\Omega$ )
ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470 $\Omega$ )

### Numbering System For Capacitors

Example:

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001 $\mu$ F)	Tolerance	Unique
ECEA	50	M		330
Type	Voltage (50V)	Characteristics		Value (33 $\mu$ F)

- Capacity values are in microfarads ( $\mu$ F) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).
- Resistance values are in ohms ( $\Omega$ ), unless specified otherwise, 1K = 1,000 $\Omega$ , 1M = 1,000k $\Omega$

Resistor Type	Wattage		Tolerance
ERD : Carbon	10 : 1/8W	12 : 1/2W	J : $\pm 5\%$
ERG : Metal Oxide	14 : 1/4W	25 : 1/4W	F : $\pm 1\%$
ERQ : Fuse Type Metal	1A : 1W	18 : 1/8W	G : $\pm 2\%$
ERX : Metal Film	S2 : 1/4W	S1 : 1/2W	J : $\pm 5\%$
ERD L : Carbon (chip)	2F : 1/4W	50 : 1/2W	K : $\pm 10\%$
ERO K : Metal Film (chip)	2A : 2W	3A : 3W	M : $\pm 20\%$
ERC : Solid	6G : 1/10W	8G : 1/8W	
ERF : Incombustible Box-Shaped			
ERM : Wire-Wound			
RRJ : Chip Resistor			
ERJ : Chip Resistor			

Capacitor Type	Voltage		Tolerance
ECE : Electrolytic	0J: 6.3V	1A: 10V	K: ±10%
ECCD : Ceramic	1C: 16V	1E: 25V	M: ±20%
ECKD : Ceramic Capacitor	1H: 50V	1V: 35V	Z: +80 % -20
ECQM : Polyester	50: 50V	05: 50V	J: ±5%
ECQP : Polypropylene	2H: 500V	2A: 100V	G: ±2%
ECG : Ceramic	1 : 100V	1J: 63V	F: ±1%
ECEA N : Non Polar Electrolytic	KC: 400V AC		C: ±0.25pF
QCU : Ceramic (Chip Type)	KC: 125V AC		D: ±0.5pF
ECUX : Ceramic (Chip Type)	(UL)		
ECF : Semiconductor			
EECW : Liquid electrolyte double layer capacitor			

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
RESISTORS(VALUE, WATTAGE)			C5	ECUV1E224ZF	0.22 25	C19	RCUV1H682MD	0.0068 50
R21	RRSA39JR50TH	0.5 1/8	C6	RCUV1H102MD	0.001 50	C20	RCSE1AT225RE	2.2 10
R22	ERDS2TJ3R9	3.9 1/4	C7	RCUV1E103MD	0.01 25	C21	RCUV1E104ZF	0.1 25
R25	RRJ6GCJ122	1.2K 1/10	C8	ECEA1CKS100	10 16	C22	ECEA0GKS470L	47 4
R26	RRSA10J103TH	10K 1/8	C9	ECEA1CKS100	10 16	C23	ECEA1HKS333	0.33 50
R27	RRJ6GCJ4R7TE	4.7 1/10	C10	ECEA0JKS220	22 6.3	C24	ECEA0GKS330L	33 4
R28	ERDS2TJ335T	3.3M 1/4	C11	ECEA0JKS221	220 6.3	C25	ECEA0GKA471I	470 4
R33	ERDS2TJ153	15K 1/4	C12	ECEA0JKS221	220 6.3	C26	RCUV1H102MD	0.001 50
R34	ERDS2TG182T	1.8K 1/4	C13	RCSE1VT104RE	0.1 35	C30	RCSE0JT335RE	3.3 6.3
CAPACITORS(VALUE, VOLTAGE)			C14	RCUV1H822MD	0.0082 50	C31	RCUV1H102MD	0.001 50
C1	RCUV1E104ZF	0.1 25	C15	ECUV1E224ZF	0.22 25	C32	ECEA1CKS100	10 16
C2	RCUV1E104ZF	0.1 25	C16	RCUV1H822MD	0.0082 50	C34	RCUV1H102MD	0.001 50
			C17	ECEA1CKS100	10 16	C35	RCUV1H102MD	0.001 50
			C18	ECUV1E224ZF	0.22 25	C37	RCUV1H472MD	0.0047 50
						C40	RCUV1H101K	100P 50



# Service Manual

Microcassette™ Recorder

Microcassette  
**RN-106D**

Color

(K)... Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)

- Please file and use this manual together with the service manual for Model No. RN-106D order No. AD8904086C1.
- This service manual contains some differences to the service manual for Model No. RN-106D (P).

## CHANGES

### ■ SPECIFICATIONS

Power Requirement: AC; 120V, 60Hz (with optional  
Panasonic AC adaptor  
RD-9443HA)

RN-106D (P) (Original)



Power Requirement: AC; 220V, 50 Hz (with optional  
Panasonic AC adaptor  
RD-9443HS)

RN-106D (E)

### ■ PARTS COMPARISON TABLE

Ref. No.	Parts name & Description	Change of Parts No.		Remarks
		RN-106D (P) (Original)	RN-106D (E)	
PACKING MATERIAL				
P3	SHEET	RPQ0019	RPQ0031	
ACCESSORY				
A1	INST. MANUAL	RQT0038P	RQT0038E	

# Panasonic

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